

ALPAO Deformable Modal Mirrors (DMM) provide an excellent correction of the most common optical aberrations. Each control channel corresponding to one optical mode (e.g. focus or astigmatism), the control is straightforward.



## Key features

### SIMPLE USE

One control channel per mode  
Embedded electronics

### OPTIMIZE ZERNIKE CORRECTION

Large deformation (up to 100 $\mu$ m)  
Low fitting error (down to 2%)

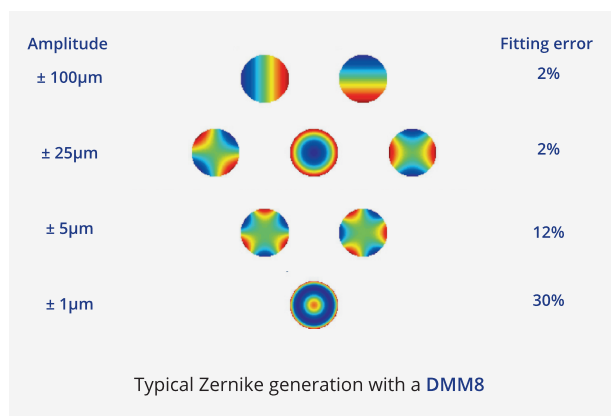
### COST EFFICIENT

Designed for  
OEM applications

## ZERNIKE CORRECTION

Using **ALPAO DMM**, you can correct the first optical aberrations at large amplitude and with high precision.

**DMM** allow to use adaptive optics as never before. You can, for example, correct alignment errors, use the defocus capability for z-scan or correct large optical aberrations.



## SIMPLE CONTROL

Each control channel corresponds to Zernike. As simply as you would do an auto-focus, you can now do an auto-astigmatism or an auto-spherical.

Straightforward control of an **ALPAO DMM** results in very low residual wavefront errors.

## FEATURES AND BENEFITS

Typical **ALPAO DMM** characteristics:

- First resonance frequency ~150Hz
- Protected Silver coating
- No protective glass
- Surface roughness <15Å RMS
- LIDT for protected silver coating<sup>2</sup>: 880mJ/cm<sup>2</sup> (@12ns, 10Hz, 1064nm) / 50W (CW @1064nm)

## INTERFACES

**ALPAO DMM** present a low-voltage and low power consumption embedded electronics, with a standard Ethernet interface (or USB using a dongle). The control and monitoring are easily performed from any web browser. A simple API based on web-services is provided, it is compatible with any language and operating system. No drivers are required.

Thanks to their standard tube packaging, **ALPAO DMM** are easily integrated into systems.

## ALPAO DMM PERFORMANCES

		DMM
Sizing	Number of control channels	8
	Pupil diameter (mm)	13.5
Quality	Active best flat (nm RMS)	30
Tip-tilt correction	Stroke (µm PV, wavefront)	100
	Fitting error (%) <sup>1</sup>	2
Focus / astigmatism	Stroke (µm PV, wavefront)	25
	Fitting error (%) <sup>1</sup>	2
Spherical correction	Stroke (µm PV, wavefront)	1
	Fitting error (%) <sup>1</sup>	30
Speed	First resonance of the membrane (Hz)	150
Mechanical dimensions	Cylinder diameter (mm)	50
	Cylinder length (mm)	50

**DMM** can be customized according to your needs (larger stroke, pupil diameter, different coating, etc).

## PRELIMINARY

- ▶ [www.alpao.com](http://www.alpao.com)
- ▶ [contact@alpao.fr](mailto:contact@alpao.fr)
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Note 1: Ratio of RMS after and before correction  
Note 2: technical note available upon request